Feb. 14, 1939. H. H. MERWIN 2,146,835

SUPPORTING DEVICE

Filed Nov. 13, 1936

FIG. 1

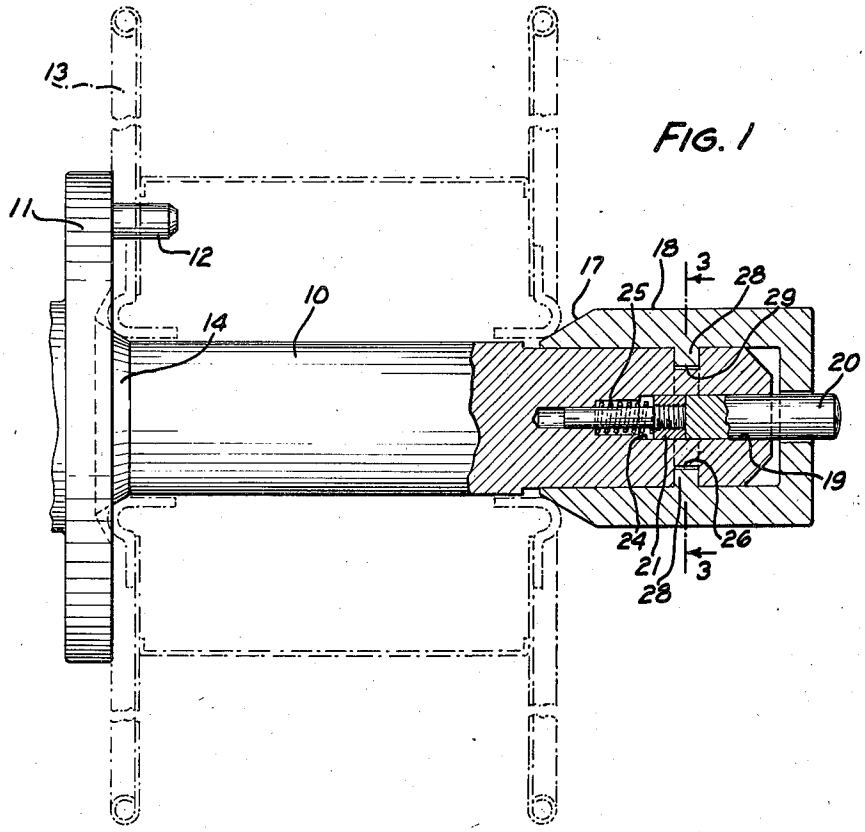


FIG. 2

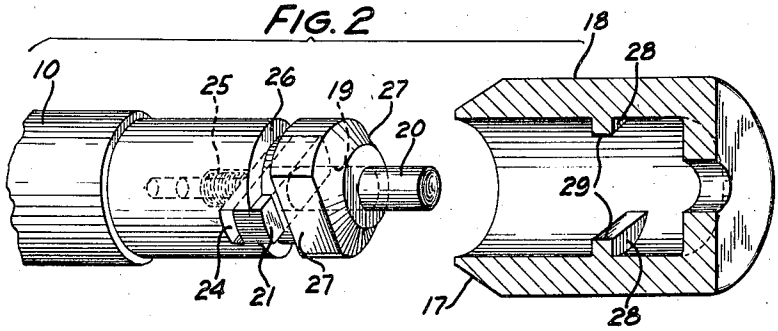
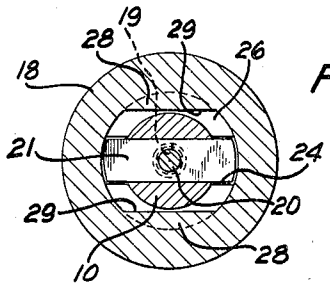


FIG. 3



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SUPPORTING DEVICE

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5 Claims. (Cl. 242—68)

This invention relates to supporting devices, and more particularly to a device for securing reels upon a spindle.

An object of the present invention is to provide a practical and effective device which permits an expeditious and positive locking and/or removal of a reel or the like from a supporting spindle.

In accordance with the above object of the invention, there is provided in one embodiment thereof a reel supporting spindle having at its free end flattened portions extending back to an annular groove for receiving internal webs or lugs within a cooperating cap. The cap is placed in position by aligning the webs with the flattened portions and when the cap has been moved to engage the reel it is rotated to bring the webs into portions of the groove not in alignment with the flattened surfaces. A spring pressed latch having a plunger for manual operation is carried by the spindle and normally extends into the groove to prevent rotation of the cap to its removal position.

Other objects and advantages of this invention will more fully appear from the following detailed description, taken in connection with the accompanying drawing, wherein

Fig. 1 is a side view, partly in section, of a device for securing a reel upon a supporting spindle embodying the features of the invention;

Fig. 2 is a fragmentary perspective view, partly in section, of the reel securing device with the locking cap shown removed from the spindle, and

Fig. 3 is a vertical section taken on the lines 3—3 of Fig. 1.

Referring now to the drawing, 10 indicates a reel supporting spindle, the right end of which, shown fragmentarily, being rotatably journaled on ball bearings (not shown). Adjacent its inner end the spindle 10 is provided with an annular flange 11 carrying upon its outer face a pin 12 arranged to enter an aperture in a head of a reel 13, shown in broken outline, whereby the reel and its supporting spindle may rotate together. An inner peripheral face of a hub portion of the reel 13 at one end engages an annular tapered face 14 formed on the spindle 10 while a similar peripheral face at the opposite end of the reel is engaged by an annular tapered face 17 provided on a locking cap 18 arranged to be slid onto the outer end of the spindle 10. When the cap 18 is locked to the spindle 10, as shown in Fig. 1, in a manner to be presently described, the reel 13 is centered with the spindle by means of the tapered faces 14 and 17 of the spindle and cap, respectively, engaging the opposite inner peripheral hub portions of the reel. The spindle 10 may be used to support either a supply or takeup reel and in the case of the latter the spindle will be positively driven.

Formed axially in the end of the spindle 10 is a shouldered bore 19 within which is slidably fitted a two-part push rod or plunger 20 having fixed thereto a transversely extending latch bar 21, which is entered in a transverse slot 24 in the spindle. A compression spring 25 surrounding a reduced portion of the push rod 20 with its ends engaging an annular shoulder along the bore 19 of the spindle 10 and the inner surface of the latch bar 21 normally acts to move the latch bar to the right side of the slot 24, as viewed in Figs. 1 and 2, into latching position. The slot 24 at its right side intersects an annular peripheral groove 26 in the spindle 10 so that when the latch bar 21 is in latching position, it is partly within the groove 26. The right or enlarged portion of the push rod 20 extends from the outer end of the spindle and through an aperture in the end wall of the locking cap 18 a suitable distance so that it may be pressed inwardly against the action of the spring 25 to withdraw the latch bar 21 from the annular groove 26.

To the right of the groove 26 in the spindle 10, diametrically opposite sides of the spindle are flattened, to provide parallel faces 27 (Fig. 2) disposed at right angles to the transverse slot 24 in the spindle. Formed on the inner periphery of the locking cap 18 are diametrically opposed lugs, webs, or ledges 28 provided with parallel flat faces 29 spaced to slide over the flat faces 27 of the spindle when aligned therewith. The dimensions of the ledges 28 of the cap 18 are such that they may be entered in the annular groove 26 of the spindle 10 when aligned therewith in sliding the cap onto the spindle. When the cap ledges 28 are aligned with the spindle groove 26, the tapered cap face 17 is engaged with the inner peripheral face of the hub portion of the reel 13 in which position the locking cap may be rotated to carry the ledges into locking position in the groove, as shown in Fig. 3.

When it is desired to remove the locked reel 13 from the spindle 10, as shown in Fig. 1, the spring pressed push rod 20 is manually pressed inwardly as far as is permitted, which movement withdraws the latch bar 21 from latching position in the annular spindle groove 26 and out of the path of the cap lugs or ledges 28 entered in the groove. With the latch bar 21 withdrawn

from the spindle groove, the locking cap 18 may be rotated either clock or counterclockwise to align the flat faces 29 of the cap ledges 28 with the flat spindle faces 27 in which position the cap may be slid off the spindle. As the cap 18 is slid off the spindle, the push rod 20 is released and the latch bar 21 is automatically moved by the spring 25 into the spindle groove 26 to the position shown in Fig. 2. Thereafter, the reel 13 may be freely slid off the spindle 10.

To lock a reel upon the spindle 10, the reel is slid onto the spindle and the spindle pin 12 is entered in the aperture of the reel head. Thereafter, the locking cap 18 is slid onto the spindle with the flat faces 27 and 29 of the spindle and cap ledges aligned. As the cap is moved inwardly on the spindle, the cap ledges 28 engage the latch bar 21 on the push rod 20 and push it out of the annular groove 26 of the spindle and upon the cap ledges being aligned with the groove the cap 18 is rotated to move the ledges thereof into locking position in the groove. During this movement of the cap ledges 28, they are withdrawn from holding relation with the latch bar 21 on the push rod 20 and the latter is then automatically moved by the spring 25 towards the right (Figs. 1 and 2) to carry the latch bar into latching position into the spindle groove 26 in which position the reel 13 is positively locked on its supporting spindle 10 and cannot be removed without first pressing the push rod 20 towards the left, as viewed in Fig. 1, against the action of the spring 25 and then manipulating the locking cap 18 in the manner previously described. Thus accidental displacement of the reel from its supporting spindle is positively prevented.

From the above description, it will be apparent that the invention provides a simple, effective and quickly detachable device for expeditiously and positively locking a reel on its supporting spindle.

Although a specific embodiment and application of the invention has been shown and described herein, it should be understood that the device is capable of other modifications and adaptations without departing from the spirit and scope of the appended claims.

What is claimed is:

1. In a device for supporting a rotatable object, a support, a removable locking cap movable in a plurality of directions on said support, a resiliently mounted element in the support, said element carrying a latch normally positioned in a channel in the support, and means on said cap arranged to engage and move said latch from the support channel and thereafter in another movement of the cap to be moved into the channel whereupon the latch again moves into the channel to lock the cap to the support and thereby the object on the support until the resiliently mounted element is pressed inwardly to withdraw the latch from the support channel.

2. In a device for supporting a rotatable object, a support, a removable locking cap movable in a plurality of directions on said support, a resiliently mounted element in the support carrying a latch normally positioned in a peripheral channel in the support, and cooperating faces on said support and cap effective when aligned to permit the cap to slide in one direction on the support to engage and move said latch from the support channel and thereafter in another movement of the cap to be moved into the channel whereupon the latch again moves into the channel to lock the cap to the support and thereby the object on the support until the resiliently mounted element is pressed inwardly to withdraw the latch from the support channel.

3. In a device for supporting a rotatable object, a support having spaced peripheral faces, a removable locking cap movable in a plurality of directions on said support, a resiliently mounted element in the support, said element carrying a latch normally positioned in a peripheral groove in the support, and internal spaced lugs on said cap adapted to slide on said support faces to engage and move said latch from the support groove and thereafter in another movement of the cap to carry said lugs into the groove whereupon the latch again moves into the groove to lock the cap to the support and thereby the object on the support until the resiliently mounted element is pressed inwardly to withdraw the latch from the support groove.

4. In a device for supporting a rotatable object, a support having spaced peripheral faces, a removable locking cap mounted for longitudinal and rotary movement on said support, a spring pressed element longitudinally movable in the support having a portion extending through said cap, said element having transversely extending latch portions normally positioned in a peripheral groove in the support, and internal spaced lugs on said cap adapted to slide on said support faces to engage and move said latch portions from the support groove during a longitudinal movement of said cap and thereafter upon rotation of the cap to move said lugs into the groove to lock the cap to the support and thereby the object on the support until the spring pressed element is pressed inwardly to withdraw the latch portions from the support groove.

5. In a device for supporting a reel upon a supporting spindle having spaced peripheral faces at its outer end, a removable locking cap movable in a plurality of directions on said spindle and engaging the reel for preventing movement thereof longitudinally on the spindle, a resiliently mounted plunger in the spindle having its outer end extending through said cap, said plunger having transversely extending latch portions normally positioned in an annular peripheral groove in said spindle, and internal spaced lugs on said cap adapted to slide on said spindle faces to engage and move said latch portions from the spindle groove and thereafter in another movement of the cap to carry said lugs into the groove to lock the cap to the spindle and thereby the reel from movement longitudinally of the spindle until the resiliently mounted element is pressed inwardly to withdraw the latch portions from the spindle groove.

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